Tasmanian Government
2012 Submission to Nation Building 2 Program

Tasman Highway/Holyman Avenue Roundabout Upgrade

September 2012

Department *of* Infrastructure, Energy *and* Resources

Tasmania
Explore the possibilities

Priority assigned by jurisdiction for NB2 funding consideration	Priority four under Connecting People
Details of full scope of project, including objectives, service requirements, project status and project phase(s) seeking funding. Note: It is expected that this will be largely addressed through the main IA submission. However, the Department requires cost estimates to be provided using the **Best Practice Cost Estimation Standard** and at both **P50 and P90**. Also to use **both 4% and 7%** for BCRs.	Information on project objectives, strategic context and options analysis is discussed in the Stage 1-6 template. Information on the technical and delivery aspects of the project, including benefit cost analysis, project risks and delivery program is discussed in the Stage 7 template. BCRs for Tasman Highway/Holyman Avenue are: • Discount Rate (7%) and P50: **0.52.** • Discount Rate (7%) and P90: **0.49.** • Discount Rate (4%) and P50: **0.83.** • Discount Rate (4%) and P90: **0.78**
Alignment with objectives of NB2 Note: This should include how a project aligns with the overarching objective of NB2, as well as how it aligns with the objective of each relevant NB2 subprogram.	The Tasman Highway/Holyman Avenue Roundabout Upgrade is submitted under the Connecting People theme of Nation Building 2. It also aligns with the Moving Freight and Safety themes. The project focuses on upgrade of the existing roundabout to provide additional lane capacity. Current traffic volumes and future projections show that this is a high volume intersection. It is the primary connection to Tasmania's major airport, and also provides access to commercial development around the airport and the Cambridge Park industrial area. The section of the Tasman Highway corridor that this roundabout is on is also a key connection for the growing Sorell area to the Hobart CBD and other major activity centres. Further details are contained under Goal Definition (Stage1-6 template).
Alignment with broader Commonwealth and state/territory policies and plans Note: Specific plans/policies to be addressed (at a minimum) include the Commonwealth's Infrastructure Investment Framework; the National Urban Policy; the National Ports and Land Freight Strategies; and the Australian Government commitment on the incorporation of ITS for major urban roads (as appropriate).	The project aligns with a number of Infrastructure Australia's strategic priorities, including: • Increase Australia's productivity • Developing Australia's cities and regions • Improve social equity, and quality of life, in our cities and our regions The project aligns with the National Urban Policy's strategic objective of improving the efficiency of urban infrastructure by providing additional capacity improvements at the connection to the Hobart's newest commercial/industrial area, in addition to

	increased urban development in the Sorell area. Further details are contained under Goal Definition (Stage1-6 template).
Overall financial exposure including identification of other partner funding Note: It is expected that this will be addressed in the main IA submission.	Full details of cost estimates are outlined in the Stage 7 template.
Identification of key strategic risks to the project Note: It is expected that this will be addressed in the main IA submission	A Risk Management Register has been developed for the project. Risks are detailed in the submission under Costs, Risks and Funding (Stage 7 template).
Quantification of the expected benefits from the proposal Note: It is expected that this will be addressed in the main IA submission.	Project benefits are outlined in the Stage 7 template.
Information regarding the extent to which the potential for private sector involvement or investment has been evaluated Note: It is expected that this will be addressed in the main IA submission.	The need for Government funding is discussed in the Stage 7 template.
Likely impacts from the project proposal on citizens and the market Note: Detail is needed on how each proposal will impact citizens and the market (as two distinct groups) – positively or negatively, and the extent of the impact	Further details on the impacts are outlined in Problem Identification, Assessment and Analysis (Stage 1-6 template).
Identification of key stakeholders in the project and the complexity of stakeholder relationships	Further details on key stakeholders and relationships are discussed in the Stage 7 template.
Extent of multijurisdictional and/or private sector involvement in the proposal	No other jurisdictions or private sector entities are involved in developing this proposal.
Details of the level of innovation and information technology	An ITS solution is not considered to be applicable to

involved in the proposal, including in relation to information technology requirements to successfully manage/implement the proposal Note: Detail is to include identification of any new/untried methodologies or technologies to be used in the project, as well as IT requirements for the proponent agency to successfully manage or implement the proposal.	the issues this project addresses.
Details of the proposed procurement methods for the proposal Note: It is expected that this will be addressed in the main IA submission.	Procurement methods for the proposal are discussed in the Stage 7 template.
Level of complexity in construction, and any known issues in relation to the construction of the project, including environmental and heritage considerations Note: It is expected that this will be largely addressed through the main IA submission. However, the Department requires sufficient detail to fulfil its probity and accountability requirements, so any additional information not explicitly addressed in the main IA submission should be provided here.	Details on construction and related issues are discussed in the Stage 7 template.
Any known issues in relation to contractual or service delivery obligations stemming from the proposal Note: This is to include any issues that are not currently present but could reasonably be foreseen.	There are no foreseen contractual or service delivery issues.
Details of the proposed governance arrangements for the proposal Note: This should be largely addressed in the main IA submission. However, the	The governance model for this project is outlined in the Stage 7 template.

Department requires an explicit statement about the experience of the management team in delivering similar proposals and whether there are any expected knowledge gaps or training needs to successfully implement the proposal.	
Details of the proposed delivery timetables and whether there are any known challenges to achieving those timeframes Note: It is expected that this will be addressed in the main IA submission.	The delivery timetable is outlined in the Stage 7 template.
Details of any significant interdependencies for the project Note: It is expected that this will be addressed in the main IA submission.	The key interdependencies for the project are outlined in the Stage 7 template.

Proposal Summary

Initiative Name:	Tasman Highway/Holyman Avenue Roundabout Upgrade
Location (State/Region(or City)/ Locality):	Cambridge, Hobart
Name of Proponent Entity:	Tasmanian Department of Infrastructure, Energy and Resources (DIER)
Contact (Name, Position, phone/e-mail):	David Spence, General Manager Infrastructure Strategy Department of Infrastructure, Energy and Resources Tel: (03) 6233 2089 Email: david.spence@dier.tas.gov.au
Executive summary	

Holyman Avenue Roundabout is located on the Tasman Highway and is part of the National Land Transport Network. It is the major access point to/from Tasmania's highest volume passenger airport at Hobart International Airport. Commercial development at the Airport, together with continued growth in the adjacent Cambridge Industrial Estate will see traffic volumes through the Roundabout increase. The Roundabout is also a key intersection on the Sorell-Hobart passenger corridor, which connects growing residential areas in Sorell and the southern beaches to the Hobart CBD.

The existing Roundabout is a five-leg roundabout with single entry, exit and circulation lanes on each leg. The western approach from Hobart is a two-lane dual-carriageway merging into one-lane at the junction; all other approaches to the Roundabout are single lane. The current operation of the roundabout is nearing capacity, with an assessment of future traffic volumes demonstrating a significant increase in the number of vehicles utilising the roundabout over the next 20 years in response to the demand drivers outlined above.

The proposed upgrades will improve safety and efficiency by providing increased capacity to cater for higher forecast traffic volumes. The upgrades are small-scale, designed to cater for growth over the medium to long term at an acceptable level of service. Alternative options are significantly higher cost and not warranted at this stage.

Is this a new submission?	Yes
Estimated cost of problems?	The strategic framework and transport system problems to which this project responds are outlined in the Overview document and within this submission. Detailed information on project costs and benefits, to the extent that they can be quantified, is contained in the Stage 7 template.
Estimated Capital Cost of Initiative by Proponent ($M, nominal, undiscounted):	$8M
Commonwealth contribution sought by Proponent ($M, nominal, undiscounted):	$8M

Other funding (source/amount/cash flow) ($M, nominal, undiscounted):	Cost reflective pricing for heavy vehicle access to the road network and road funding reform is being considered as part of the national Heavy Vehicle and Investment Reform agenda, and the Tasmanian government will continue to actively participate in this reform process. Tasmania has many attributes for a pilot study of approaches developed through national processes. It is considered that a national approach to funding and financing transport infrastructure, supported by all levels of government, is critical to effectively address long term transport infrastructure needs. In this context, the recent Infrastructure Australia's Finance Working Group's report "Infrastructure Finance and Funding Reform" is an important lead for national discussion. Tasmania is not in a position currently to adopt a unilateral approach. Further work is required on project financing and the issue of cost reflective pricing in small regional economies.
BCR by Proponent excluding Wider Economic Benefits	0.49
Estimated program	Project planning and development from 2013-14; construction 2014-16.

Goal Definition

The goal of the project is to improve efficiency and safety at the Holyman Avenue Roundabout through targeted capacity upgrades.

Holyman Avenue Roundabout is part of the Tasman Highway, a major urban corridor in Greater Hobart, and part of the National Land Transport Network. The Highway is a Category 1 Trunk Road under the Tasmanian State Road Hierarchy (see Map 1).

The Roundabout provides direct access to the Hobart International Airport (HIAPL), and localised access for passenger and freight vehicles to high growth commercial areas at Cambridge and Hobart International Airport. The Roundabout is part of a broader urban corridor connecting central Hobart with growing residential areas at Sorell and the Southern Beaches, and in providing tourist access to/from Tasmania's East Coast.

Positive contribution to Infrastructure Australia and Nation Building 2 strategic priorities

The project aligns with the following Infrastructure Australia objectives:

- ***Improving the efficiency of connections to major road and rail freight corridors to facilitate domestic trade and international exports*** – the Tasman Highway provides a critical link to Tasmania's major passenger airport, Hobart International Airport. The Airport is key for the movement of high value, low volume quality produce, particularly to the Asian export market. The Airport Master Plan indicates significant future growth in commercial development on the airport site. The Highway also connects to the Cambridge Industrial Estate, an expanding industrial and commercial precinct adjacent to the Airport. In terms of freight, this section of the Highway carried an estimated average of 373,000 tonnes of freight per annum (2012).

- ***Achieving better utilisation of existing infrastructure*** – the proposed improvements will enable the existing infrastructure to cater for projected growth in both passenger and freight vehicles over the medium term.

- ***Developing our cities*** – the Tasman Highway is the gateway to Hobart from Tasmania's major airport. The Tasman Highway at this location carries over 20,700 vehicles per day, with three quarters of these movements accessing the residential areas of Sorell and the Southern Beaches. It is critical for Hobart's future economic growth that this part of the Tasman Highway operates efficiently to meet current and forecast demand.

The project is submitted under the *Connecting People* theme of Nation Building 2, and furthers the objectives of this program area:

- ***Connecting People***

  The upgrade will improve travel reliability for passenger vehicles, including commuters travelling into the Hobart CBD. It will increase the capacity for movement in all directions and reduce pinch-point congestion.

The project also aligns with the following Nation Building 2 theme areas and objectives:

- ***Safety***

  While this intersection currently has a reliable safety record, the proposed upgrade will minimise safety risks associated with expected forecast growth over the next decade. As a key entry point into the State, and the end of the National Road Network, it is essential to maintain the highest standard of safety on this key intersection.

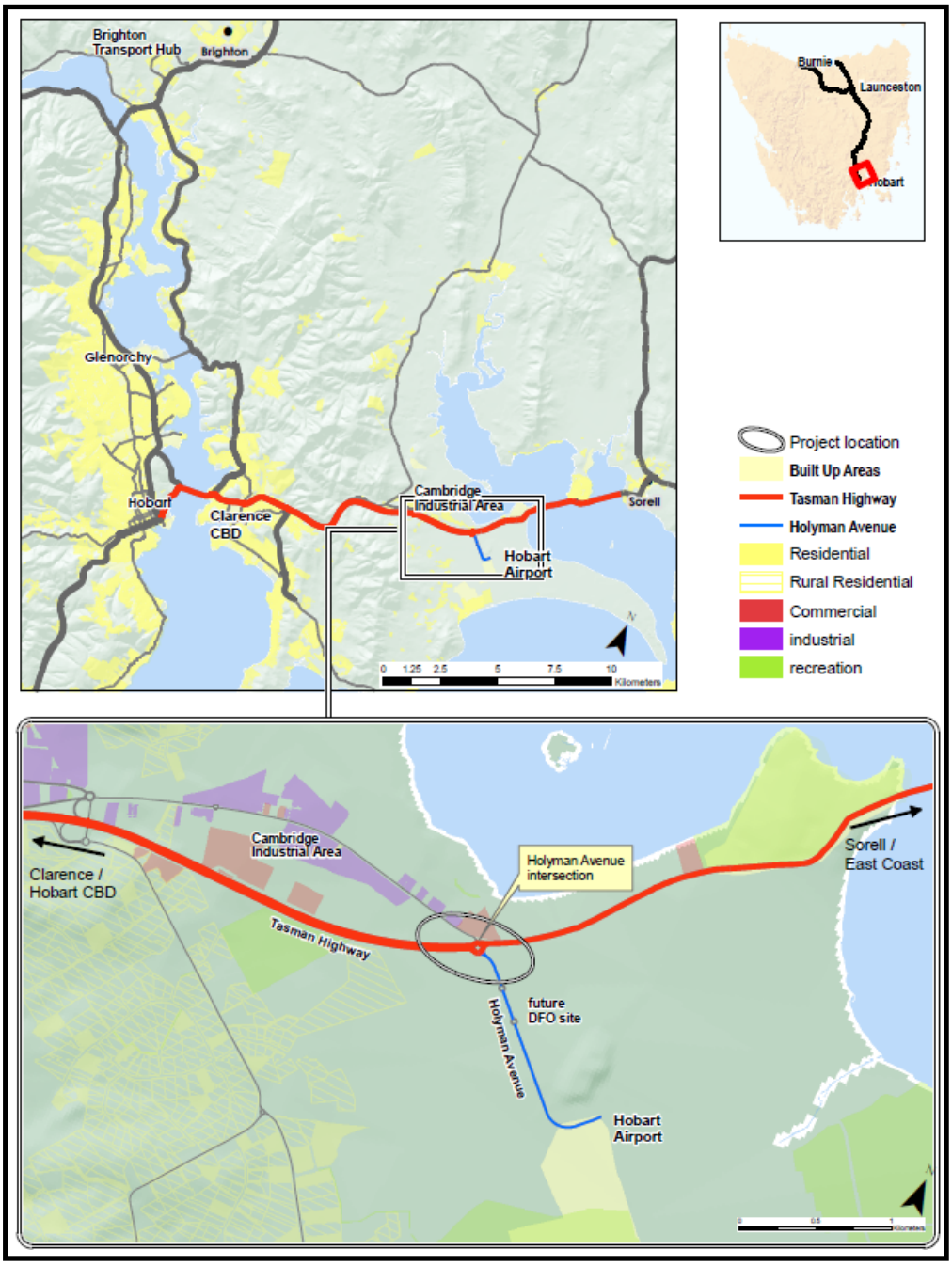
- ***Moving Freight***

  Upgrade of the Roundabout will support improved efficiency for freight vehicles, by providing increased capacity and improved access to both Hobart International Airport and the Cambridge Industrial Estate, the latter a major light industrial and commercial growth area for Greater Hobart.

Alignment with State/regional strategic plans

Tasmanian Infrastructure Strategy

The *Tasmanian Infrastructure Strategy* coordinates the major economic sectors of transport, water, energy and digital infrastructure, and recognises the critical role land use planning has in the location and provision of infrastructure investments. Holyman Avenue roundabout is listed as a priority project under the objective “Tasman Highway to Hobart International Airport – Upgrade of Interchanges”.



Map 1. Location of Holyman Avenue roundabout.

Tasmanian Auslink Corridor Strategy 2007

The Tasman Highway between Hobart CBD and the Hobart International Airport is a key road link essential to the function of the Tasmanian Auslink Corridor between Hobart and Burnie. The importance of Hobart International Airport for interstate business and tourist travel, along with high-value and time-sensitive freight, is recognised in this Strategy.

Tasmanian Road Safety Strategy

The *Tasmanian Road Safety Strategy 2007 – 2016* provides the strategic direction in supporting key initiatives to eliminate fatalities and serious injuries on Tasmanian roads. In particular the alignment of the approaches to the roundabout on the Tasman Highway will be adjusted to progressively reduce the approach speed of vehicles prior to entering the roundabout and encountering circulating vehicles.

Southern Integrated Transport Plan

The *Southern Integrated Transport Plan* – released in 2010 - is a collaborative initiative between the Tasmanian Government, Southern Tasmanian Councils Authority, and twelve member councils. It provides a coordinated and strategic framework to recognise and address transport issues within the Southern Region over the next twenty years.

Targeted infrastructure upgrades to sections of road and major intersections, particularly through improved access to key corridors – including the Tasman Highway – are identified as a key strategy to deliver on the Plan's objective "Better utilisation of available road space through improved access to key corridors at specific locations through targeted intersection upgrades."

Hobart Airport Master Plan

The *2009 Hobart Airport Master Plan* is a 20-year Plan for the development of Hobart Airport. This development includes both aeronautical and non-aeronautical infrastructure, including the development of airport land for commercial enterprise. The Holyman Avenue Roundabout is identified as critical to support development growth and increased traffic flows in and out of the Airport site.

Infrastructure Delivery Imperative

Upgrade of the Tasman Highway has been identified as a priority by all levels of government. The corridor from Sorell to the Hobart CBD is a key part of Greater Hobart's urban transport network, supporting both commercial and residential growth in adjacent areas.

The Holyman Avenue Roundabout is a key pinch point on the Tasman Highway, requiring upgrade to meet medium- to long-term traffic volumes and access requirements.

Problem identification, assessment and analysis

The existing Holyman Avenue Roundabout is near capacity, with an assessment of future traffic volumes demonstrating a significant increase in the number of vehicles utilising the roundabout over the next 20 years. The key demand factors behind these higher volumes are:

- Continued growth at Hobart International Airport, Tasmania's highest volume airport. Over 1.8 million passengers moved through its gates in 2011, with forecast growth predicted to increase by 3.5% annually to 2029-30.

- Continued expansion of the adjacent Cambridge Industrial Estate, including national 'big-box' retail outlets covering furniture, hardware, homeware and appliance outlets.

- Planned commercial and industrial development on land surrounding the Hobart Airport, including a Direct Factory Outlet, homemaker centre and office spaces.

- Ongoing residential growth at Sorell and the Southern Beaches, a key commuter area to Hobart. Since 2001, the population of this area has grown by around 20%. The area is also expanding as a sub-regional service area and is one of the first rollout locations for the National Broadband Network.

Upgrade of Holyman Avenue Roundabout compliments the Tasmanian Government's whole-of-corridor approach to the Tasman Highway from the Airport to the Hobart CBD. This includes:

- Past investment in grade-separated interchanges at Mornington and Acton Road.
- A proposal to upgrade the eastern approaches to the Tasman Bridge, submitted as part of Nation Building 2.
- Introduction of variable speed messaging to manage peak period traffic flows and incidents.

Analysis of current and future performance

The Roundabout is a five-leg roundabout with single entry, exit and circulation lanes on each leg. The western approach from Hobart is a two-lane dual-carriageway merging into one-lane at the junction; all other approaches are single lane. Current operation of the Roundabout is nearing capacity, with an assessment of future traffic volumes demonstrating a significant increase in the number of vehicles utilising the roundabout over the next 20 years. Along with an increase in the volume of traffic to Hobart Airport, continued residential growth to the east of the junction at Midway Point, Sorell and Dodges Ferry will continue to see traffic flows increase. The Roundabout adjoins and provides access to, the Cambridge industrial area, which has undergone significant growth in the past five years.

Movements through the Holyman Avenue Roundabout are forecast to experience an annual growth rate of around 2.8% annually from 2012 to 2022. The majority of these movements are passenger vehicles, with heavy vehicles accounting for an average of 4.8% of vehicles in the AM peak and 2% of vehicles in the PM peak periods. While this would be expected to increase in line with commercial development at the Airport, passenger vehicles are the key drivers of increased traffic volumes at this location.

The crash history for the Roundabout over the past 10 years identifies 26 crashes in total, 10 of these casualty crashes with no fatal or serious injuries. The majority of these crashes were same lane/rear end and run-off road crashes. Anticipated increases in total vehicle numbers moving through the intersection, with increased queuing distances, is likely to see an increase in these accident types.

Table 1 below identifies the current lane entry/exit conditions at the roundabout.

Approach to Holyman Avenue Roundabout	Entry	Exit
Tasman Highway from Hobart	Two lane dual-carriageway merging to one	One lane merges into two
Kennedy Drive	Single lane	Single lane
Tasman Highway from Sorell	Single lane	Single lane
Holyman Avenue	Single lane	Single lane
Cranston Parade	Single lane	Single lane

Table 1. Present lane arrangements at Holyman Avenue roundabout for entry and exit.

Forecast increases in traffic volumes will see increased delay and queuing distances on entering the Roundabout, particularly at peak periods (see Table 2). The most significant results will be longer commute times to and from the Hobart CBD, including from Sorell in the AM Peak and Kennedy Drive (Cambridge Industrial Estate) in the PM peak.

Approach	Demand Flow (veh/h)		Avg Delay (sec)		Queue Distance (m)	
	AM	**PM**	**AM**	**PM**	**AM**	**PM**
Tasman Highway from Hobart						
2012	655	1313	9.3	8.9	25.1	105.5
2022 – Undeveloped	864	1640	9.8	145.6	40.2	1296.3
2022 – Project Case	1059	1947	10.6	24.5	19.4	170.4
Kennedy Drive						
2012	84	211	12	47.1	5.2	54.5
2022 – Undeveloped	114	281	14	1660.8	9.4	1249.9
2022 – Project Case	188	329	10.4	259.6	4.8	247.7
Tasman Highway from Sorell						
2012	1372	603	84.6	17.6	655	28
2022 – Undeveloped	1636	727	713.9	19.1	4204.4	50.1
2022 – Project Case	1815	859	26.5	20.8	104.7	44.6
Holyman Avenue						
2012	199	443	82.1	9.5	86.1	26.2
2022 – Undeveloped	299	667	61.7	19.2	103.2	91.5
2022 – Project Case	398	1631	14.5	12.3	30.5	68.2
Cranston Parade						
2012	4	7	30.3	12.8	1.2	0.6
2022 – Undeveloped	4	8	28.4	21.8	1.1	1.3
2022 – Project Case	12	69	15.1	20.4	1.5	10.7

Table 2. Current and forecast levels of vehicle flow, average delay and queuing distance for entry onto Holyman Avenue roundabout."2022 – Project Case" applies the preferred project option.

Option Generation and Assessment

The goal of the project is to improve efficiency and safety at the Holyman Avenue Roundabout through targeted capacity upgrades.

Five options were considered to achieve this objective:

1. Do nothing
2. Replace the existing roundabout with a signalised intersection
3. Additional entry, exit and circulation lanes with grade-separated overpass from Tasman Highway west into Holyman Avenue
4. Replace existing roundabout with two roundabouts (north and south of the Tasman Highway) with grade-separation for through movements
5. Additional entry, exit and circulating lanes on the existing roundabout (*preferred*)

1. *Do nothing*

Continuing to use the current roundabout without upgrade will compromise the future efficiency, reliability and safety of a key link in the National Land Transport Network and the Tasmanian Auslink Corridor. This link is a critical connection for the movement of both people and freight and is the priority access route to Hobart for airport traffic as well as growing residential and commercial developments. With this intersection already operating at capacity, ongoing unimproved access will lead to bottlenecks and increased safety risks.

2. *Signalised Intersection*

This option involves replacement of the existing Holyman Avenue Roundabout with a signalised intersection; construction of additional lanes; and removal of the Cranston Parade leg of the intersection. While this would increase capacity so support higher traffic volumes, analysis indicated it may also lead to increased severity of crashes.

3. *Grade-separated overpass from the Tasman Highway to Holyman Avenue*

This option involves an increase in entry, exit and circulation lanes to the existing roundabout, along with construction of a grade-separated overpass from the Tasman Highway to Holyman Avenue. This would provide a ‘fly-over’ for right turning traffic from Hobart into the Airport, representing an effective solution for this specific traffic flow. It assumes this is the priority road connection, delivering limited efficiency gains for all other traffic flows. The option is high cost relative to outcomes.

4. *Replace existing Holyman Avenue Roundabout with two new roundabouts and grade-separation*

Upgrade to construct a grade-separated overpass for the through movement of vehicles on the Tasman Highway. This included the replacement of the existing roundabout with one roundabout to the north of the Tasman Highway and one to the south. The solution best aligns with the design of all other intersection upgrades along the Highway (west), delivering consistency to road users. However, it is high cost and not warranted by short to medium term traffic volumes.

Preferred Option

5. *Additional lanes on existing roundabout*

Upgrade of the existing Roundabout, effecting additional entry, exit and circulating lanes will increase overall capacity and safety. Although the efficiency improvements provided by this option are not as substantial as other project options, it is low cost and provides an appropriate medium term infrastructure solution to maximise safety and provide efficiency of through movements and access in the context of increased traffic volumes.

Appendix 1 – Map